

REMARKS/ARGUMENTS

Favorable consideration of this application, as presently amended and in light of the following discussion, is respectfully requested.

Claims 4-8, 23 and 25-27 are presently pending in this application, Claims 6-8 having been withdrawn from further consideration by the Examiner, Claim 24 having been canceled, and Claims 4, 5, 25 and 26 having been amended by the present amendment.

In the outstanding Office Action, Claims 4, 5 and 23-27 were rejected under 35 U.S.C. §103(a) as being unpatentable over the alleged admitted prior art in view of Beggs et al. (U.S. Patent 3,443,931) and Babcock et al. (U.S. Patent 2,986,460).

Regarding the submission of the corrected drawings requested in the Office Action, the corrected drawings were filed with the response to the Office Action dated April 15, 2003.

Claim 4 has been amended, and Claims 5, 25 and 26 have been amended accordingly. The claim amendments are believed to find clear support in the claims, specification, and drawings as originally filed.¹ Hence, no new matter is believed to be added thereby.

Briefly, amended Claim 4 of the present invention is directed to a method of producing reduced iron pellets including pelletizing a mixture of iron oxide powder, a reducing material and a binder into raw material pellets, reducing the raw material pellets in a rotary bed-type direct reducing furnace to obtain reduced iron pellets, and discharging the reduced iron pellets from the rotary bed-type direct reducing furnace at a temperature ranging between 1100 and 1200°C, transferring the reduced iron pellets to a heat retaining and rolling portion insulated by heat insulating material of a rotary cylinder, and sintering the reduced iron pellets by rolling in the heat retaining and rolling portion of the rotary cylinder at a temperature ranging between 800 to 1200°C. By sintering the reduced iron pellets as such,

¹ See, for example, Specification, page 24, lines 10-11, and Fig. 5.

the reduced iron pellets significantly keep their heat from dissipating.² Therefore, the reduced iron pellets retain their heat more efficiently and undergo sufficient sintering more effectively at a higher temperature, thereby obtaining the compacted reduced iron pellets with increased collapsing strength.³

Babcock et al. disclose a production of iron. Nevertheless, Babcock et al. fail to teach "sintering the reduced iron pellets by rolling in the heat retaining and rolling portion of the rotary cylinder at a temperature ranging between 800 to 1200°C" as recited in amended Claim 4. On the other hand, Babcock et al. disclose cooling the reduced ore in the rotary cooler 18 which is cooled from outside by immersing the lower part in the water bath 26.⁴ Instead of retaining the heat of the reduced ore as obtained during the reducing process, the Babcock et al. method actively cools down the reduced ore in the rotary cooler 18. Accordingly, the temperature of the reduced ore is decreased more rapidly than in a heat-retaining environment, and such a cooling process at decreasing temperatures is not believed to provide sufficient sintering effects on the reduced ore. Therefore, the method recited in amended Claim 4 is believed to be clearly distinguishable from Babcock et al.

Beggs et al. disclose a process for making metallized pellets. Nevertheless, Beggs et al. do not teach "sintering the reduced iron pellets by rolling in the heat retaining and rolling portion of the rotary cylinder at a temperature ranging between 800 to 1200°C" as recited in amended Claim 4. Beggs et al. merely disclose the use of the rotary hearth furnace 12 for metallizing the pellets, in which the hearth 26 is rotated.⁵ Therefore, the subject matter recited in amended Claim 4 is believed to be patentably distinguishable from Beggs et al.

² See id., page 13, lines 7-9.

³ See id., page 25, line 17, to page 26, line 8.

⁴ See Babcock et al., column 5, lines 33-34, and Figs. 1 and 2.

⁵ See Beggs et al., Figs. 1 and 2.

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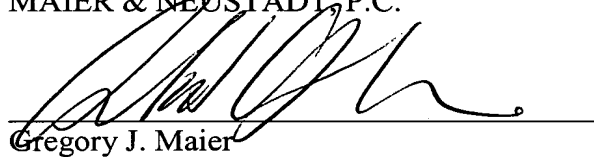
Because neither Babcock et al. nor Beggs et al. discloses the providing and rolling as recited in Claim 4, even the combined teachings of these cited references are not believed to render the method recited in Claim 4 obvious.

For the foregoing reasons, Claim 4 is believed to be allowable. Furthermore, since Claims 5, 23 and 25-27 depend ultimately from Claim 4, substantially the same arguments set forth above also apply to these dependent claims. Hence, Claims 5, 23 and 25-27 are believed to be allowable as well.

In view of the amendments and discussions presented above, Applicants respectfully submit that the present application is in condition for allowance, and an early action favorable to that effect is earnestly solicited.

Respectfully submitted,

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